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NATIONAL TRANSPORTATION SAFETY B

RAILROAD ACCIDENT REPORT

HAZARDOUS MATERIALS ACCIDENT IN THE RAILROAD YARD OF THE NORFOLK AND WESTERN RAILWAY AT DECATUR, ILLINOIS JULY 19, 1974

NATIONAL TRANSPORTATION SAFETY BOARD
Washington, D.C. 20594
REPORT NUMBER: NTSB-RAR-75-4

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16. Abstract GATX 41623 and four other tank cars loaded with isobutane gas were uncoupled at the west end of Decatur Yard by a switching crew and allowed to free roll eastward on yard track 11. The car impacted an empty boxcar, and its coupler overrode the tank car coupler and punctured the tank. Isobutane escaped and vaporized for 8 to 10 minutes before it exploded. The yard, surrounding residences, and commercial facilities were damaged extensively by fire and shock waves. Seven employees died from burns, and 33 employees were injured. Three hundred sixteen persons outside the rail yard were also injured as a result of the explosion. Property damage was estimated at $18 million.

The National Transportation Safety Board determines that the probable cause of the accident was the overspeed impact between the heavy cut of tank cars and the uncoupled light boxcar, which resulted from the release of the tank cars at a higher-than-acceptable switching speed. The lack of written guidelines to assist the switchman in determining the proper switching speed contributed to the accident. The crewmembers' lack of understanding of the risks involved in switching hazardous materials also was a contributing factor.

Recommendations were made regarding tank head shields and couplers, employee training, hazardous materials accident data reporting, and regulations to limit losses in hazardous materials accidents.

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FOREWORD

The accident described in this report has been designated a major accident by the National Transportation Safety Board under the criteria established in the Safety Board regulations.

This report is based on facts obtained from an investigation conducted by the Safety Board in cooperation with the Federal Railroad Administration. The conclusions, the determination of probable cause, and the recommendations are those of the Safety Board.

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NATIONAL TRANSPORTATION SAFETY BOARD
WASHINGTON, D. C. 20594

RAILROAD ACCIDENT REPORT

Adopted: April 10, 1975

Hazardous Materials Accident in the Railroad Yard of the Norfolk and Western Railway at Decatur, Illinois July 19, 1974

SYNOPSIS

On July 19, 1974, a switching crew in the Decatur Yard of the Norfolk and Western Railway at Decatur, Illinois, switched five jumbo tank cars loaded with isobutane onto yard track 11 in a free-rolling, uncontrolled operation. The five tank cars rolled eastward on track 11 and impacted an empty boxcar standing free and uncoupled. On impact, the west coupler of the boxcar overrode the east coupler of the first tank car and penetrated the tank car.

Isobutane spilled from the 22-inch by 26-inch puncture for 8 to 10 minutes and vaporized. At 5:03 a.m., an undetermined source ignited the vaporized isobutane and it exploded. The shock wave was felt 40 miles from the rail yard; more than 700 homes were damaged -- some so badly that they were declared uninhabitable. Railroad equipment on neighboring tracks was damaged extensively by the explosion and subsequent fire. Damage was estimated at $18 million.

Numerous injuries were reported by persons outside the rail yard. Seven railroad employees who were near the explosion were killed.

The National Transportation Safety Board determines that the probable cause of the accident was the overspeed impact between the heavy cut of tank cars and the uncoupled light boxcar, which resulted from the release of the tank cars at a higher-than-acceptable switching speed. The lack of written guidelines to assist the switchman in determining the proper switching speed contributed to the accident. The crewmembers' lack of understanding of the risks involved in switching hazardous materials also was a contributing factor.

FACTS

Accident

The tank cars involved in the accident were part of an 18-car draft which was interchanged to the Norfolk and Western Railway (N&W) at

Decatur. An interchange inspection was conducted by N&W car inspectors, and they determined that all cars were free of defects and acceptable for interchange. (See Appendix A.)

The draft of cars, including the engine, was assigned for switching to east Decatur Yard assignment No. 1, which worked from 11:45 p.m., July 18 to 7:45 a.m., July 19. Assignment No. 1 moved the cars from track 5 to the lead track on the west end of the yard and began the switching.

During the switching of the draft, the five-car cut of loaded tank cars was routed toward track 12 instead of track 11. Then two cars were switched onto track 10, and N&W boxcar 49203 was switched onto track 11. The car was empty. After that move, the switching crew pulled the five tank cars and two boxcars back to the middle lead, from which point the two boxcars were switched onto track 4. The five-car cut of tank cars was uncoupled on the lead track about 20 car lengths west of the switch to track 11 at a speed, according to the crew, of 3.5 to 4 mph (or no faster than a brisk walk).

When the five tank cars were switched correctly toward track 11, no member of the crew took exception to the speed at which the cars were moving as they entered track 11. However, a yard clerk testified that he believed that the cars were moving a little too fast, and he suggested to a crewmember that a handbrake be applied to that cut of cars.

Immediately after the cut of tank cars was released onto track 11, the crew proceeded to switch the cars on tracks 10 and 12. During their work, the crew noticed a dense gray cloud in the vicinity of the dormitory. As the crew observed the cloud, it exploded. All crewmembers ran toward the East Decatur Tower. No member of the crew recalled hearing any abnormal impacts or sounds before the explosion, but the yard clerk reported hearing an abnormally high impact in the vicinity of the dormitory. An employee in the dormitory also reported being awakened by loud switching impact noises in the area before the explosion.

The weather was clear and a northwest breeze was blowing.

Accident Site and Method of Operation

Yard Location and Site -- N&W's Decatur yard is located on the east side of the city. A service road, which runs east and west, divides the yard into an eastbound portion and a westbound portion. The general yard offices and East Decatur Tower are located at the west end of the westbound yard. Brush tower is located at the east end of the westbound yard. (See Figure 1.) A yardmaster is on duty in each of the towers 24 hours a day.

Each end of the yard is elevated so that cars which are uncoupled at either end will maintain their cutoff speed into the basin unless they are

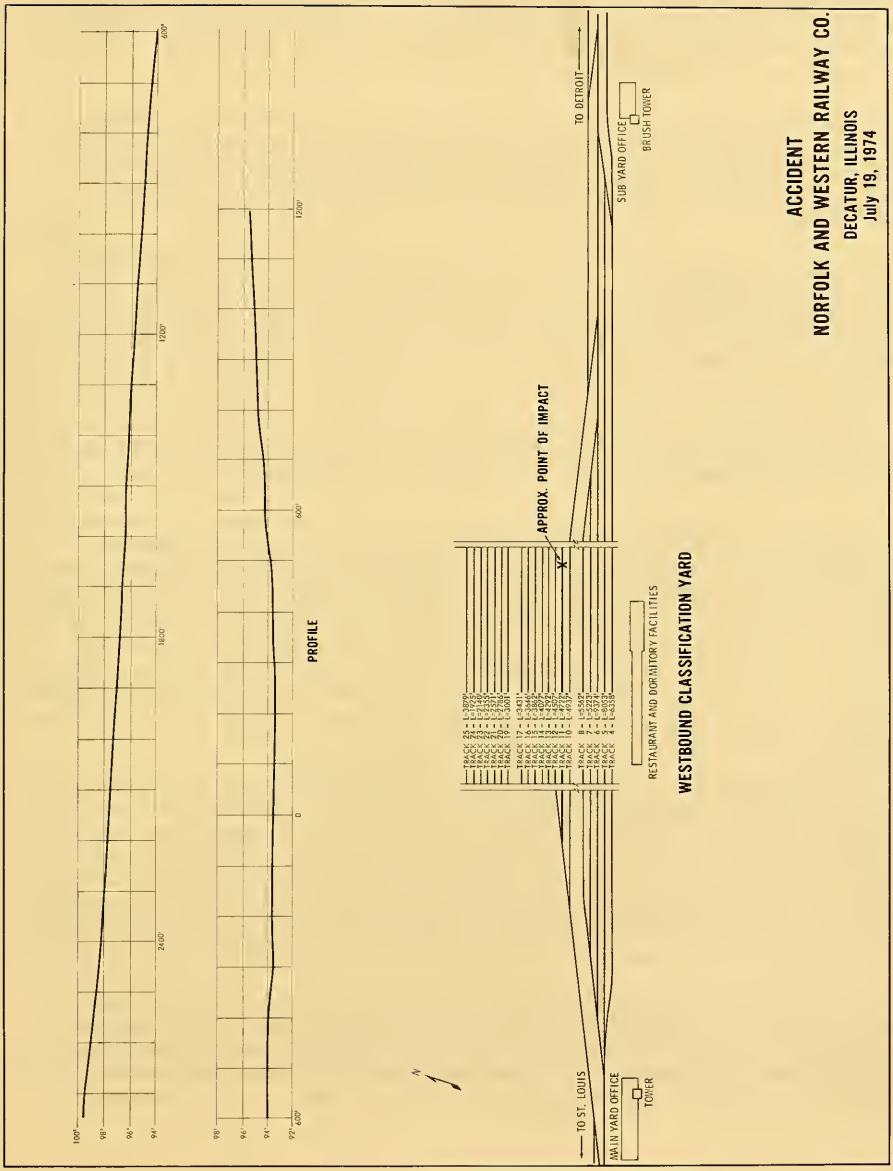

Figure 1. Plan view of portion of Westbound Yard.

braked to a stop or coupled with other cars on the same track. Track 11 in the westbound yard has descending grades eastward of .35 percent at the west switch for about 120 feet, .47 percent for about 75 feet, .22 percent for about 2,100 feet, and a 0 percent grade in the basin. There are no mechanical retarding devices.

Annex Location -- The Annex building, which consisted of a small restaurant, locker space, and sleeping facilities, was located about midway between East Decatur Tower and Brush tower adjacent to the service road. The building was a dormitory for crews whose home terminals were not Decatur.

Method of Operation -- The responsibility for the operation of the yard was assigned to an assistant superintendent who was assisted by two trainmasters and a general yardmaster. The yardmasters assigned the work to the switching crews. Each switching crew was composed of a yard foreman, two switchmen, an engineer, and occasionally a fireman or engineer trainee.

Cars received at Decatur Yard were inspected by qualified car inspectors. After the inspection, the results were reported to the yardmaster who assigned the cars to a crew for switching.

Cars were switched at each end of the yard in a typical flat-switching manner. The locomotive accelerated the cars to the appropriate speed, then a switchman (pin puller) uncoupled the cars and as the locomotive slowed, they rolled freely to a stop. The appropriate routes were set up by the other switchman (field man) who may control the speed of the free-rolling cars by means of handbrakes. Based on their past experience, the crewmembers determined the proper switching speed. There were no written guidelines on which the switchmen could base their determinations. The yard foreman had the primary responsibility for switching the cars at safe speeds.

The switchmen were concerned with releasing a car at a speed fast enough to move it onto the assigned track so that it would not block the switching lead. Switchmen stated that they were not responsible for the speed of the car after it left the lead, and that often, they did not know how far the cars would roll before impacting other cars on the track. No special switching precautions were taken for hazardous materials placarded "DANGEROUS." Switchmen interviewed did not have a clear understanding of the proper manner in which to handle cars of Class A explosives.

Operational procedures were established and regulated by general orders, general notices, bulletins, and operating rules. Carrier and regulatory witnesses testified that they assumed that conformance with safety rules will assure safe transportation of hazardous materials. They also testified that they knew of no rules that were not observed which contributed to the accident.

In its approach to safety regulations governing hazardous materials, the Federal Railroad Administration (FRA) attempts to relate the degree of protection afforded specific commodities to the degree of severity of accidents. No attempt is made to relate the amount of material present in an accident to the severity of the accident likely to occur.

Training and Experience

The car inspectors, yardmasters, the clerk, and switchmen were trained on the job. The engineer had been promoted after 3 years as a fireman and had been engineer on a locomotive for about 15 months. The engineer was not trained under the current training program, which includes classroom instruction and written and oral tests.

The traincrew's experience varied from 1 1/2 years for the yard foreman to 5 months for one of the switchmen. The yardmaster had about 5 years' experience, and the yard clerk had about 6 years. One car inspector had 20 years' experience, while the other one had only 6 months. Their training and experience did not include instructions regarding the risks of transporting dangerous articles. Information relating to handling of hazardous materials was obtained verbally or from posted material. Supervisors did not insure that employees received, read, or understood the posted material.

There was no procedure for disseminating new information about the risks of switching hazardous materials, except the posting of information furnished by the Bureau of Explosives. Safety information acquired from a similar switching accident at East St. Louis, Illinois, in January 1972, was not made available to the supervisors or switchmen.

Impact and Explosion

Switchmen reportedly released the cut of tank cars at a speed of 3.5 to 4 mph. The five tank cars impacted empty boxcar N&W 49203, which had stopped in track 11 after traveling about 2,700 feet. The couplers between GATX tank car 41623 and N&W 49203 met slightly off center vertically so that the boxcar coupler was deflected downward with sufficient force to break the carrier iron and to bend permanently the shank of the boxcar coupler. The boxcar coupler then overrode the tank car coupler and punctured the head of the tank car at the 5-o'clock position. The boxcar lifted off its truck and canted northward and was pushed about 63.5 feet without striking the cars on track 11 ahead of it.

Liquid isobutane spilled from the 22-inch by 26-inch puncture at the rate of about 5,000 gallons per minute. The liquid vaporized, and a northwest wind spread the cloud southeastward for about 8 to 10 minutes. The cloud was then ignited by an unknown source and exploded violently. (See Figure 2.)

Figure 2. The explosion area in Decatur Yard.

At Decatur the open-air explosion of the gas-air mixture is substantiated by two significant facts: (1) All cars containing commodities which could explode were accounted for after the explosion; (2) there were no craters after the explosion. Such an explosion would have required a carload of explosive material and would have caused a large crater.

Damages -- Damages resulted primarily from fire and concussion. When the gas cloud ignited, the flash scorched a large portion of both yards and ignited numerous cars and their lading. Fire damage was confined to the yards.

Fire and concussion demolished 283 freight cars and damaged to a lesser extent 312 others. The dormitory was destroyed by fire and concussion.

Concussion damage was evident in all directions from the site of the explosion. Most structural damage was within a mile of the explosion; however, windows were broken more than 3 miles from the explosion. The most extensive structural damages occurred on the north side of the yard. Industrial facilities, residences, and mobile homes were damaged.

About 700 residences were damaged by concussion, 67 of which authorities declared uninhabitable; damage ranged from broken windows to collapsed roofs and walls. Many furnishings were damaged by flying glass and other debris. Lakeview High School, which was adjacent to the eastbound yard, was one of the most severely damaged buildings. An unfinished addition to the school was demolished. Ten other schools were also damaged. (See Figures 3 and 4.) Thirty-one commercial establishments reported damages to structures and contents.

Total estimated damages were as follows:

Railroad	
Cars	$ 3.7 million
Lading	3.2 million
Other Costs	1.0 million
Commercial	4.9 million
Residential	2.5 million
City, including emergency services	3.1 million
	$18.4 million

Figure 3. Typical Damage, Residential Area
Decatur, Illinois

Figure 4. Damage to Lake View School, Decatur, Illinois.

Injuries -- Most of the reported injuries were burns, lacerations, contusions, or a combination of these. Forty N&W employees were injured, seven of whom died from burns. Most of the injured employees were either in the dormitory or adjacent to it. All of those who were fatally burned were outside of the dormitory.

Three hundred sixteen nonrailroad persons suffered burns, lacerations, contusions, anxiety, eye injuries, and concussions.

Equipment

GATX 41623 -- GATX 41623 was a 33,500 gallon, DOT Specification 114A340W stubsill tank car built by General American Transportation Corporation in September 1971. It was equipped with 100-ton, Barber S2C trucks with roller bearings and 36-inch steel wheels. It had truckmounted brakes with an 8½-inch cylinder and ABEX H-I-A shoes. The handbrake was a Miner 6600L. The tank car was equipped with a type F, interlocking, F-70-B-HT-E coupler. It had a lightweight of 85,300 pounds, a capacity of 236,000 pounds, and at the time of accident, a gross weight of 237,674 pounds. The tank car was equipped with a safety valve set to relieve internal pressure when the pressure exceeded 280.5 pounds.

In addition to the 22-inch by 26-inch puncture, the running board, handrail, airbrake equipment, handbrake mechanism, and coupler on the east end of the car were damaged. The east end of the car was also burned. (See Figure 5.)

Impact marks on the coupler of the tank car indicated that the coupler met the coupler on the boxcar at impact and subsequently was overridden by the boxcar coupler.

GATX 41623 complied with the requirements of 49 CFR 173, 174, and 179. It was not equipped with head shields or top and bottom shelf couplers, nor were they required.

N&W 49203 -- N&W 49203 was a 40-ton, 40-foot, steel boxcar with wood flooring and lining. Its lightweight was 44,000 pounds with a load limit of 98,000 pounds. The car was equipped with cast iron brakeshoes, an Ajax AAR 1942 handbrake, friction bearings, and type E couplers.

The west end of the car was caved in, and the carrier iron and portions of the striker casting below the carrier iron were damaged by impact. The severe damage to the knuckle and other impact scars confirmed that the couplers met at impact and that the boxcar coupler bypassed over the tank car coupler. The car was also damaged by fire.

Other Cars of Hazardous Materials -- The other four tank cars coupled to GATX 41623 were either DOT Specification 112A or 114A, 30,000 gallon

Figure 5. "B" end of GATX 41623.

tank cars loaded with isobutane. The five-car cut of tank cars had a gross weight of about 1,169,000 pounds.

In addition to the five tank cars of isobutane, there were seven cars of hazardous materials at various locations in the yard at the time of the explosion. Except for GATX 41623, none of the cars of hazardous materials were seriously damaged.

Emergency and Rescue

Designated railroad offices called local emergency rescue and police services. Intrayard communications were limited severely by damages to the electrical power supply and intercom and speaker systems.

Fire was difficult to control because there were no fire hydrants in the yard and firemen had to pull fire hoses long distances.

Although there was no emergency plan, employee volunteers moved hazardous materials, including one car of explosives, out of the affected area. The injured were taken to nearby hospitals.

N&W Operating Controls

On July 26, 1974, the N&W issued a General Notice which said that cars bearing a "DANGEROUS" placard would henceforth be handled as a Class "A" explosive in switching operations. (See Appendix B.) The current instructions for handling Class "A" explosives were reissued, widely disseminated, and posted.

Tests

At the Safety Board's request, the N&W conducted a series of rollability tests to determine how similar cars and randomly selected cars would roll on track 11. A five-car cut of loaded tank cars, similar to those in the accident, was released at speeds varying from 1 to 6 mph. When released at 3 mph, the cut accelerated to 8.4 mph 2,609 feet east of the track 11 switch. In every case, the speed of the cut of cars increased after release.

In tests made by the Railway Progress Institute and the Association of American Railroads (RPI-AAR) Railroad Tank Car Safety Research and Test project, a string of secured cars was impacted by a heavy ram car with a coupler mounted so that it struck the tank head directly in the middle. In order to puncture the tank head of a car like the one at Decatur, a speed of 12.7 mph was required. Technical witnesses who were familiar with the RPI-AAR tests and with the puncture at Decatur estimated that the latter puncture could not have been made at an impact speed of less than 15 mph.

Regulatory Activity

The Administrator, Federal Railroad Administration, on August 9, 1974, published a Notice of Proposed Rulemaking to amend 49 CFR 174.589 to prohibit the switching of all freight cars placarded "DANGEROUS" unless coupled to a locomotive and to prohibit free-rolling cars from coupling to those placarded cars. (See Appendix C.)

The Illinois Commerce Commission on August 8, 1974, issued an interim order, General Order No. 200, which required special handling of placarded cars in a shove-to-rest switching operation. Railroads in Illinois, except the N&W, obtained an injunction to forestall its implementation. (See Appendix D.)

After a similar tank car accident in the Southern Pacific's Englewood Yard at Houston, Texas, on September 21, 1974, the Safety Board on October 11, 1974, recommended that FRA invoke its emergency powers "to prohibit switching of tank cars containing compressed flammable gases unless the tank cars are under the control of a locomotive and prohibit such tank cars from being coupled by other free-rolling equipment." The Safety Board further recommended that the FRA "... issue a list of the compressed flammable gases that are normally shown on waybills." (See Appendix E.)

On October 25, 1974, FRA issued Emergency Order No. 5, which requires a "shove-to-rest" switching of DOT Specification 112A and 114A tank cars loaded with compressed flammable gas. (See Appendix F.)

On July 23, 1974, the FRA issued an amendment to 49 CFR 173 and 179. The amendment established the requirement for protective head shields on DOT-112A and -114A tank cars after August 31, 1974. Industry has until December 31, 1977, to bring these designated tank cars into conformance.

The FRA regulations require that nonemployees' injuries as a result of an event arising from the operation of a railroad be reported if the injury results in:

1) Death of any person from an injury within 365 days of the incident.

2) Injury to one or more persons that requires medical treatment.

Effective January 1, 1975, the form for reporting such injuries is FRA form F-6180.55.

In addition to the foregoing report used by the railroads, all Common Carriers are required to report to the Department of Transportation on form DOT F-5800.1 accidents that involve the unintentional release of hazardous materials.

Neither of these reports deals specifically with the nature of the injury, the cost or extent of the damage, the danger range of the hazardous material, nor other relevant data.

ANALYSIS

The Accident

The marks on the coupler of the punctured tank car and on the coupler of the empty boxcar clearly indicate that the two couplers engaged at first impact. To puncture the tank, the boxcar coupler had to disengage vertically, override the coupler of the tank car, and strike the head of the tank with sufficient force. The broken carrier iron on the boxcar indicates that an initial downward movement of that coupler, then a rebound upward, caused the vertical separation. That action is consistent with what one would expect when an unusually heavy cut of large tank cars moving at excessive speed attempts to couple to a free-standing light boxcar.

The shape and size of the puncture indicates that it was made by the coupler of the empty boxcar. Although the speed of the impact is not known, in order to disengage the coupler vertically and maintain enough momentum to puncture the tank, an impact speed greater than that which the cut of cars could have attained if they had been released at 3 to 4 mph would be required. To attain a speed of 10 mph at impact, a five-car cut of tank cars similar to the cut in this accident was released at 6 mph.

Several other factors may have combined to cause the overspeed switching: (1) The switchmen had not been instructed about the speed requirements for switching cars, and they did not understand the rolling characteristics of various cars on that track. (2) It appears that supervisors had not emphasized to the switchmen the risks of overspeed couplings. (3) The acceptance by supervisors of routine overspeed damage in switching often leads to contempt for good switching requirements by the switchmen.

The switchmen's lack of understanding about the risks of switching hazardous materials resulted from incomplete training and failure on the part of supervisors to disseminate the information developed by N&W management. Management's failure to disseminate information about similar accidents at other railroads may have contributed to the switchmen's lack of understanding of the risks.

Losses Attributable to Hazardous Materials

Currently, there is no feasible emergency action to control these hazardous materials after they escape from the tank cars. In the absence

of such action, safety regulations should seek to limit the size of the potential losses. Currently, regulations do not address this principle for bulk tank car shipments.

The Safety Board is aware of two other cases in railroad yards since 1972 1/ and one other case outside the railroad environment 2/ in which mixtures of escaping liquefied petroleum gas and air exploded or detonated.

The Dormitory Location

All of the employees who were fatally burned were outside the dormitory and most of those seriously injured were inside or in the vicinity of the dormitory. The location of the dormitory subjected those persons to known hazards. Since the explosion, N&W has arranged for dormitory services outside the yard.

Postaccident Emergency Plan

After the explosion, some employees assisted the injured and helped to move cars of hazardous materials to a safer location. A documented emergency plan with which all employees were familiar would have apportioned and assigned responsibilities for emergency activities.

Fire damage was more extensive than it would have been if there had been a fire hydrant system in the yard or other preplanned procedure for obtaining water.

Puncture of Tank Heads in Switching Accidents

Logically, the puncture of tank cars by couplers can be prevented by preventing the couplers from disengaging. Before the accident at Decatur, it was known that couplers will puncture tank heads under certain overspeed circumstances. Equipping tank cars with top and bottom shelf couplers might prevent most disengagements which result from overspeed switching impacts and other overstressing of the couplers. Also it was known that a significant number of those punctures could be prevented by a head shield.

Currently 49 CFR 179.14 requires that tank cars be equipped with interlocking couplers (type F). Interlocking couplers only resist disengagement in both directions when they are mated with another interlocking coupler. However, the top and bottom shelf coupler resists disengagement when mated with standard type E or interlocking couplers.

1/ A&S Gateway Yard, East St. Louis, Ill., January 22, 1972, NTSB Report Number NTSB-RAR-73-1, and S.P. Englewood Yard, Houston, Texas, September 19, 1974. Report not released.

2/ Phillips Pipe Line Co. Propane Gase Explosion, Franklin County, Missouri, December 9, 1970. NTSB Report Number NTSB-PAR-72-1.

The capability of the top and bottom shelf coupler on tank cars should be determined by controlled tests. Tests are necessary to determine if the couplers can resist disengagement in accidents and to determine if there is a need or justification for their use in conjunction with head shields. Therefore, the Safety Board believes that the performance of the top and bottom shelf E coupler has not been analyzed sufficiently and that further study is needed.

Since the accident at Decatur, Illinois, FRA regulations now require that DOT specification 112A and 114A tank cars be equipped with head shields. The Safety Board also believes that continuing tests and close in-service surveillance of head shields are needed to determine if the industry-alleged problems with stress and fatigue on the tank car stub-sill actually exist.

In the meantime, FRA Emergency Order No. 5 will lower significantly the probability of a tank head puncture by a coupler during switching.

Damage and Casualty Reports

The FRA testified that it attempts to relate the degree of protection in its regulations for specific commodities to the degree of severity of accidents likely to occur in transportation.

In order to implement this approach, the effects of hazardous material releases in accidents must be predicted. Such predictions depend on factors such as the size of the danger zone, dispersion characteristics of the hazardous materials, dangers to persons and properties, and other variables. Without experimental data, the best source of these data is hazardous materials accidents which involve hazardous materials for which regulations are being considered.

The Safety Board pointed out in its report of the Alton and Southern accident at East St. Louis, Illinois, 3/ that there is a need to identify and document the principal loss-producing mechanism encountered in hazardous materials transportation accidents. This documentation should also identify the danger zone in which injuries occur. A recommendation to resolve this need was made to the FRA in that accident report.

Current reporting forms F-6180.55 and DOT F-5800.1, which are used by the railroads, do not require the reporting of accident data which would support the desired predictions. This results in an inadequate data base by which a regulatory agency can determine the needed protection.

3/ Railroad Accident Report number NTSB-RAR-73-1, Hazardous Materials Railroad Accident in the Alton and Southern Gateway Yard in East St. Louis, Illinois, January 22, 1972.

Amendment of form F-6180.55 could provide for the reporting of the needed data from railroad accidents; however, if form DOT F-5800.1 were amended, the data for predictions of harm in all transportation modes could be developed.

CONCLUSIONS

1. The head of tank car GATX 41623 was punctured by the coupler of N&W boxcar 49203.

2. The coupler of N&W 49203 overrode the coupler of GATX 41623 because of an attempted coupling at an undetermined speed which was equal to or exceeded 12.7 mph.

3. The overspeed impact resulted because switchmen released the five-car cut of tank cars at an excessive speed.

4. The blast resulted from the explosion in open air of vaporized isobutane which had escaped from the punctured tank car, GATX 41623.

5. The crew that switched the tank cars was not trained and instructed adequately about risks involved in the switching of tank cars of flammable compressed gases.

6. The N&W did not have a plan or a system that made firefighting materials convenient and readily available to combat fires in Decatur Yard.

7. Head shields or top and bottom shelf couplers on GATX 41623 might have prevented the puncture of the tank head; however, head shields and top and bottom shelf couplers cannot be relied upon to eliminate completely all tank car punctures.

8. Requirements for limiting losses when the heads of tank cars containing hazardous materials are punctured need to be considered in the regulations.

9. GATX 41623, its lading, and its handling complied with requirements of Federal Regulations and railroad interchange rules.

10. Reporting requirements for DOT form F-5800.1 need to be amended to provide information to support implementation of the regulatory approach that the degree of protection should reflect the degree of severity in hazardous materials accidents.

11. Federal requirements for reporting railroad accidents which involve hazardous materials distort intermodal safety comparisons

and do not require sufficient information to assess accurately the hazards to the public from various materials.

PROBABLE CAUSE

The National Transportation Safety Board determines that the probable cause of the accident was the overspeed impact between the heavy cut of tank cars and the uncoupled light boxcar, which resulted from the release of the tank cars at a higher-than-acceptable switching speed. The lack of written guidelines to assist the switchman in determining the proper switching speed contributed to the accident. The crewmembers' lack of understanding of the risks involved in switching hazardous materials also was a contributing factor.

RECOMMENDATIONS

The National Transportation Safety Board recommends:

That the Federal Railroad Administration, in cooperation with the Railway Progress Institute and the Association of American Railroads:

(1) Promulgate regulations to limit losses in accidents involving the transportation of bulk hazardous materials by rail. (Recommendation No. R-75-18)

(2) Determine the capabilities of top and bottom shelf couplers, head shields, and a combination of both, and issue regulations to require that DOT-112A and -114A tank cars be equipped with the best practical combination. (Recommendation No. R-75-19)

That the Norfolk and Western Railway Company:

(3) Insure that the yard employees and their supervisors who are involved in the handling of hazardous materials are cognizant of the risks involved in switching hazardous materials and require switchmen to switch cars of hazardous materials accordingly. (Recommendation No. R-75-20)

(4) Establish a plan for combatting emergencies in Decatur Yard such as the one on July 19, 1974, which should include an adequate fire control system. (Recommendation No. R-75-21)

That the Secretary of Transportation:

(5) Revise form F-5800.1 to obtain information required to support the rulemaking approach so that the degree of protection reflects the degree of severity of specific commodities in accidents. Such changes should address at least the delineation of the danger zone, and types and degree of injury or damages ex-

perienced by the various kinds of parties at risk. (Recommendation No. R-75-22)

The Safety Board reiterates and reemphasizes the importance of the following recommendation made in previous accident reports. The recommendation has not been implemented fully and is applicable to this accident:

Railroad Accident Report, Hazardous Materials Accident in the Alton and Southern Gateway Yard in East St. Louis, Illinois, January 22, 1972:

"4. The Federal Railroad Administration review and, if necessary, revise its reporting requirements for accidents involving hazardous materials to obtain more accurate reporting of casualties adjacent to railroad premises. (Recommendation No. R-73-4)."

BY THE NATIONAL TRANSPORTATION SAFETY BOARD

/s/ JOHN H. REED
Chairman

/s/ FRANCIS H. McADAMS
Member

/s/ LOUIS M. THAYER
Member

/s/ ISABEL A. BURGESS
Member

/s/ WILLIAM R. HALEY
Member

April 10, 1975

APPENDIX A
Cut Slip For Assignment No. 1

Initial	Number	Kind	Track					
AESX	8384	T	4	9711UP	SYRUP	EMERY	TR	EMERYVI1
AESX	10839	T	30	9711KCS	SYRUP	WOLF	BKG	SHREVE7
AESX	10813	T	30	9711BN	SUGAR	INDU	TFR	SEATTLE
NW	161537	B	4	9711UP	FLOUR	KRUSTE	D	SEATTLE
NW	49203	B	11	9310NW		AGT		STLOUIS
PFE	459293	N	10	9711UP		AGT		KANCIT8
PFE	456020	N	10	9711UP		AGT		KANCIT8
PSPX	33785	T	11	9310TRR	LPGAS	PHILL	PE	ESTLOUI DANGER6
PSPX	33796	T	11	9310TRR	LPGAS	PHILL	PE	ESTLOUI DANGER6
PSPX	33559	T	11	9310TRR	LPGAS	PHILL	PE	ESTLOUI DANGER6
PSPX	32020	T	11	9310TRR	LPGAS	PHILL	PE	ESTLOUI DANGER6
GATX	41623	T	11	9310TRR	LPGAS	PHILL	PE	ESTLOUI DANGER6
NATX	22325	T		9179NW	CNOIL	ANDER	CL	JACKSOV
AESX	8401	T	4	9711NP	SBOIL	DOUBLE	D	CTYOFIN
AESX	8342	T	4	9711NP	SYRUP	EMERY	TR	EMERYVI
AESX	904	T		9179NW	SYRUP	CARNA	TI	JACKSOV
AESX	8209	T	7	9711ATS	SBOIL	STAR	KIS	TERMISL
ITC	8431	B	4	9711UP	FEED	CHIN	GRA	CHINO

APPENDIX B

NORFOLK AND WESTERN RAILWAY COMPANY

GENERAL NOTICE

SPECIAL INSTRUCTIONS FOR THE HANDLING OF

CERTAIN CLASSIFICATIONS OF "DANGEROUS" TANK CARS

EFFECTIVE IMMEDIATELY, LOADED TANK CARS PLACARDED "DANGEROUS" WHICH FALL IN THE FOLLOWING HAZARDOUS MATERIALS CLASSIFICATION AS INDICATED IN THE "DESCRIPTION OF ARTICLES" SECTION OF THE WAYBILL WILL BE DESIGNATED AS CLASS "A" DANGEROUS AND HANDLED IN SWITCHING OPERATIONS. IN ALL YARDS AND ON LINE OF ROAD IN THE SAME MANNER AS ARE CARS CONTAINING CLASS "A" EXPLOSIVES; THAT IS, THEY WILL ONLY BE MOVED WITH LOCOMOTIVE ATTACHED. ALSO, NO OTHER CAR ROLLING FREE WILL BE ALLOWED TO COUPLE TO ANY SUCH CAR, BUT MUST ONLY BE MOVED WITH LOCOMOTIVES, AND ALL COUPLINGS WILL BE MADE WITH NO MORE FORCE THAN IS NECESSARY TO COMPLETE THE COUPLING:

FLAMMABLE COMPRESSED GAS

FLAMMABLE POISON GAS - HYDRO CYANIC ACID (HCN)

POISON GAS OR LIQUID - CLASS "A"

ANY "DANGEROUS" PLACARDED TANK CAR FALLING IN ANY OTHER HAZARDOUS MATERIALS CLASSIFICATION SHOULD BE HANDLED IN ACCORDANCE WITH EXISTING RULES.

/s/ R. F. Dunlap

SENIOR VICE PRESIDENT-OPERATIONS

ROANOKE, VIRGINIA

July 26, 1974

APPENDIX C

DEPARTMENT OF TRANSPORTATION
HAZARDOUS MATERIALS REGULATIONS BOARD
WASHINGTON, D.C. 20590

29197

[49 CFR Part 174]

[Docket No. HM-120; Notice No. 74-11]

FREIGHT CARS

Switching of Placarded "Dangerous"

The Hazardous Materials Regulations Board is considering amendment of § 174.589, of Title 49 Code of Federal Regulations, which prescribes the requirements for handling placarded freight cars carrying hazardous materials.

As a result of preliminary findings concerning the catastrophic tank car explosions at Decatur, Illinois, on July 19, 1974, and Wenatchee, Washington, on August 6, 1974, the Board believes that § 174.589 should be amended to prevent further occurrences. Although the National Transportation Safety Board has not yet completed its investigation of these accidents nor determined their probable cause, it appears that the Decatur accident may have occurred as a result of rough handling and that rough handling of freight cars placarded "Dangerous" during switching operations may have contributed to the Wenatchee accident.

The proposed changes in § 174.589 are described below:

Paragraph (c). It is proposed to expand the provisions of this section to include freight cars placarded "Dangerous." This would prohibit the uncoupling or cutting off of these cars while they are in motion, the striking of these cars by other cars moving under their own motion, and the coupling of these cars with more force than is necessary to complete the coupling but in no case at a speed of more than 4 m.p.h.

Paragraph (d). It is proposed to delete this paragraph as surplusage since all freight cars placarded "Dangerous" would be required to be handled in accordance with the provision of paragraph (c).

Pursuant to the provisions of section 102(2)(c) of the National Environmental Policy Act (42 USC 4321, et seq.), the Board has considered the requirements of that Act concerning Environmental Impact Statements and has determined that the amendments proposed in this notice would not have a significant impact on the quality of human environment within the meaning of that Act. Accordingly, an Environmental Impact Statement is not necessary and will not be issued with respect to the proposed amendments.

In consideration of the foregoing, it is proposed to amend 49 CFR Part 174 as follows:

In § 174.589, paragraph (c) would be revised; paragraph (d) would be deleted; paragraphs (e) through (n) would be redesignated paragraphs (d) through (m) respectively as follows:

§ 174.589 Handling cars.

• • • • •

(c) *Switching of Placarded Cars.* A car placarded "Dangerous", "Explosives", "Poison Gas", or "Flammable Poison Gas", or any flat car carrying a trailer placarded "Explosives", "Poison Gas", "Dangerous", or "Dangerous-Radioactive Material" shall not be cut off while in motion. No car moving under its own motion shall be allowed to strike any car placarded "Dangerous", "Explosives", "Poison Gas", or "Flammable Poison Gas", or any flat car carrying a trailer placarded "Explosives", "Poison Gas", "Dangerous", or "Dangerous-Radioactive Material" nor shall any such car be coupled into with more force than is necessary to complete the coupling but in no case at a speed of more than 4 m.p.h.

(1) When transporting a car placarded "Explosives" in terminals, yard, side tracks, or sidings such cars shall be separated from the engine by at least one nonplacarded car.

(2) Closed cars placarded "Explosives" shall have doors closed before they are moved.

(d) [Deleted]

• • • • •

Interested persons are invited to present their views on these proposals. Communications should identify the docket number and be submitted in triplicate to the Secretary, Hazardous Materials Regulations Board, Department of Transportation, Washington, D.C. 20590. Communications received on or before September 20, 1974, will be considered before final action is taken on these proposals. All comments received will be available for examination by interested persons at the Office of the Secretary, Hazardous Materials Regulations Board, Room 6215, Trans Point Building, Second and V Streets, SW., Washington, D.C. both before and after the closing date for comments. The proposals contained in this notice may be changed in light of the comments received. It is contemplated, due to the serious potential of danger in the handling of cars placarded "Dangerous", that a final rule in this proceeding may be effective in less than 30 days from the date of its publication in the FEDERAL REGISTER.

AUTHORITY: Transportation of Explosives Act (18 U.S.C. 831-835) section 6 of the Department of Transportation Act (49 U.S.C. 1655).

Issued in Washington, D.C., on August 9, 1974.

JOHN W. INGRAM,
Federal Railroad Administrator
Member, Hazardous Materials
Regulations Board.

[FR Doc.74-16750 Filed 8-13-74;8:45 am]

APPENDIX D

STATE OF ILLINOIS

ILLINOIS COMMERCE COMMISSION

Illinois Commerce Commission, on its own motion,	:	
	:	General Order 200
Hazardous materials regulations.	:	

INTERIM ORDER

By the Commission:

WHEREAS, by Section 57 and other provisions of the Public Utilities Act this Commission has authority to promulgate rules prescribing safety devices and appliances to be utilized by public utilities and to require the safe operation by public utilities of their plant and equipment, and

WHEREAS, there has been an increase in this State and elsewhere of incidents involving the carriage and handling of hazardous materials, and

WHEREAS, those incidents have resulted in substantial property damage and in injuries and loss of life, and

WHEREAS, there are indications that the causes of those incidents have included not only track failures, concerning which this Commission has pending other appropriate proceedings, but also equipment defects and inadequate operating practices, and

WHEREAS, Class A explosives and poisonous gases have been subjected to special railroad handling procedures as specified in R. M. Graziano's Tariff No. 27, Ill. C.C. No. 3, and experience indicates that other materials listed in that tariff as hazardous are similarly dangerous and, therefore, all materials required by that tariff to be placarded should be subjected to special handling and inspection procedures as hereinafter set forth, and

WHEREAS, the Commission finds that a hearing should be scheduled, at which to receive the views of interested persons and organizations with respect to such regulations, but further the Commission finds that there exists a state of urgency which requires that regulations as hereinafter set forth should be adopted on an interim basis.

IT IS THEREFORE ORDERED upon the Commission's own motion, subject to its power of modification, alteration and withdrawal, that the hazardous materials regulations attached hereto as Appendix "A" be, and the

same are hereby, adopted, to be effective upon service of copies of said regulations upon the designated agents of railroad public utilities.

IT IS FURTHER ORDERED that a hearing be scheduled for 11:00 a.m., on August 26, 1974, at the Commission's offices in Springfield, at which time the Commission's staff, railroad public utilities and other interested persons and organizations shall be provided the opportunity to offer evidence, comments and recommendations with respect to the regulations attached hereto as Appendix "A" as well as to offer for the Commission's consideration any other proposed regulations pertaining to the carriage and handling of mazardous materials.

By order of the Commission this 8th day of August, 1974.

(SIGNED) MARVIN S. LIEBERMAN

Chairman

(S E A L)

WSC/kl

APPENDIX D

HAZARDOUS MATERIALS REGULATIONS

Reference hereinafter to "placarded cars" shall mean and include all cars bearing placards placed thereon according to the requirements for shipping hazardous materials as set forth in R. M. Graziano's Tariff No. 27, Ill. C.C. No. 3, or supplements thereto or successive issues thereof.

1. No placarded cars shall be released to roll free on any track. Nor shall any cars be released to roll free on any track on which a placarded car is standing. When cars are switched under these conditions, they shall remain coupled to motive power until brought to a complete stop.

2. When a switch list is given to a switching crew, placarded cars shall be plainly indicated in such a manner that the crew can follow the above special procedures.

3. These requirements shall also apply to trains on the road which are required to perform switching operations at intermediate stops.

4. When placarded cars arrive in a yard, the yard master shall notify all switching employees on duty at that time of the presence of these cars, warning them to watch for the placard indicating the presence of hazardous material so that all special handline procedures are followed. This shall not apply to through trains not to be switched.

5. Whenever the movement known as "feeling for a joint" is undertaken with cuts of cars containing placarded cars, it shall be required that a trainman ride the car at the head of one of the cuts of cars to communicate by radio with each engine to advise of the proximity of the opposing cuts so that a smooth and easy coupling can be accomplished.

6. Placarded cars, as they arrive in a yard, shall be thoroughly inspected by an experienced car inspector for any and all defects as to car structure and components and a record of such inspection shall immediately be made and filed with the yard master. No placarded car shall be moved until such inspection shows the car to be free of defects. Any car found to have a defect shall have necessary repairs made immediately. If such repairs would endanger the repair area, the hazardous materials shall first be removed from the defective car and such other precautions taken as will permit safe repair or removal. In the event of leakage, the car shall be further segregated and removed as far as practical from any others and explosive experts called to the scene immediately to take charge of further repairs and handling.

7. No through movements of placarded cars shall be moved over mainline tracks that do not qualify as class 3 tracks or better by FRA standards.*

8. No placarded cars shall be handled on passing-sidings where said tracks do not qualify as class 2 or better by FRA standards.*

9. No placarded cars shall be handled on tracks in yards where said tracks do not qualify as class 1 or better by FRA standards.*

10. A system of routing shall be implemented whereby placarded cars which will travel any substantial distance within the State of Illinois will be routed along the safest possible route through the State. The safest route shall be determined by considering:

    (1) The FRA classification of the tracks, over which the car is to be operated,

    (2) The proximity of the route to population centers, and

    (3) Routing the car over the lines which would require the fewest switching and interchange movements.

11. All railroads shall implement a safety program which would acquaint their operating personnel with the danger involved in the handling of cars containing hazardous material. This program shall include instruction on recognition of hazardous material placards used, and the precautions to be followed in handling of cars in accordance with the placard and the foregoing requirements.

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*

FRA Classes of Track	Freight Train Operating Speeds
Class 1	10 mph
Class 2	25 mph
Class 3	40 mph
Class 4	60 mph
Class 5	80 mph
Class 6	110 mph

NATIONAL TRANSPORTATION SAFETY BOARD
WASHINGTON, D.C.

APPENDIX E

ISSUED: October 11, 1974

Forwarded to:

Honorable John W. Ingram
Administrator
Federal Railroad Administration
Washington, D. C. 20590

SAFETY RECOMMENDATION(S)

R-74-29 & 30

On July 19, 1974, a tank car was punctured during switching operations in the Norfolk and Western Yard at Decatur, Illinois. On September 21, 1974, a tank car was similarly punctured during switching operations in the Southern Pacific Englewood Yard, near Houston, Texas. Both tank cars contained heavier-than-air compressed flammable gases, which, as a result of the punctures, leaked and exploded. Several persons were killed and many were injured.

On January 22, 1972, a similar accident occurred in the Alton and Southern Gateway Yard in East St. Louis, Illinois. Each of these accidents produced injury and damage well beyond the confines of railroad property.

Following the 1972 accident at East St. Louis, the Safety Board recommended that:

> "The Federal Railroad Administration establish a requirement that railroad carriers handle switching operations of cars containing large shipments of hazardous material, with a danger range beyond railroad property boundaries, in the same manner as they handle switching operations of cars containing explosives." (Recommendation No. R-73-2.)

There had been no similar accident on record, and only one occurrence of the explosion of liquefied petroleum gas by detonation in open air. The Board, however, considered that

this accident demonstrated the possible results from the release of hazardous material having a danger range far beyond the boundaries of railroad property, and that precautions should be taken to prevent errors in switching from impinging upon the community. The background of the recommendation in the report showed that "minor accidents" were being tolerated in many instances in railyards and that a small percentage of cars were being subjected to switchyard impact above 10 mph.

The FRA reply said essentially that a wide range of materials would have to be included under a recommendation designed to confine damage to the railroad property, and gave the opinion that it would be more cost-beneficial to prevent overspeed impacts in all railroad hump yards than to require controlled movements on the subject cars by locomotive.

The accident at Decatur, Illinois, on July 19, 1974, demonstrated that detonation of LPG gas in open air, following a switching accident, could recur. This accident involved switching in a flatyard rather than humping operations, and also involved free-rolling cars. Improvements to humping could not have prevented this accident.

The Hazardous Materials Regulations Board, over signature of the Administrator, FRA, on August 9, 1974, issued a Notice of Proposed Rulemaking which would implement the Board's 1973 recommendation that evolved from the East St. Louis accident. The proposal also mentioned an accident at Wenatchee, Washington, on August 6, 1974, which is currently being investigated by the Safety Board. In that accident a large scale explosion occurred with effects far beyond the railroad yard. It is not yet determined whether the Wenatchee accident involved switching.

The FRA proposal would in effect, prohibit switching of all freight cars placarded "dangerous," without a locomotive attached, and would prohibit the same placarded cars from being coupled by free-rolling car impact during switching. This proposal contemplates essentially the same scope of definition of hazardous materials which was described by the FRA in its earlier reply to the Board's initial recommendation.

APPENDIX E

While this notice (Docket No. HM-120; Notice No. 74-11) was still open for comment, the accident occurred at the Englewood Yard at Houston. This accident involved the same detonation-in-open-air explosion mechanism as in the accidents at Decatur and East St. Louis, Illinois. It also involved a puncture in the head of a tank car by an opposing coupler similar to those found in the Decatur and East St. Louis accidents. The cars involved had been humped, as at East St. Louis.

Whereas the Board's original recommendation sought to cover the full range of disastrous effects on the community which might arise from free switching of large quantities of any hazardous material, the Decatur and Houston accidents have drawn attention more specifically to the escape of heavier-than-air compressed flammable gases. The occurrence of open air detonation of such gases in a railroad yard environment, thought to be unique in 1972, is now considered to be a probability. As the East St. Louis accident report pointed out, the mechanism by which the normally expected flashfire becomes an explosive detonation is as yet unknown. The compressed gases released in the three accidents were not the same, propylene having been released at East St. Louis, isobutane at Decatur, Illinois, and butadiene at Houston. Nevertheless, all three cases exhibited the phenomenon of open air detonation in a railroad yard. Although the three accidents carry no statistical significance a question is now raised as to whether there is some undetected reason for such detonations to occur in railroad yards.

The Safety Board believes that since these three accidents involved compressed flammable gases, the final FRA rule should include this category of hazardous materials. The later accidents have not only increased the predictability of a recurrence, but have also focused attention on compresed flammable gases in free-rolling switching operations. Therefore, the problem of detonation of compressed flammable gaees must be dealt with at this time, to prevent recurrence of this type of accident.

The time allowed to respond to the NPRM has been extended 30 days beyond the original date of September 20, 1974.

Consequently, at least 30 days will pass before any action will be taken to prevent recurrences.

The Safety Board believes that prompt action is required and that the emergency powers provided to FRA under the Federal Railroad Safety Act of 1970 were intended to cover such new situations. These emergency powers should be employed to prevent tank cars containing compressed flammable gases from rolling-free during switching operations or from being struck by or coupled to other free-rolling cars.

In view of the above, the National Transportation Safety Board recommends that the FRA:

1. Through its emergency powers, issue an order to prohibit switching of tank cars containing compressed flammable gases unless the tank cars are under the control of a locomotive and prohibit such tank cars from being coupled by other free-rolling equipment.

2. To assure conformance with such an order, issue a list of the compressed flammable gases that are normally shown on waybills.

These recommendations are temporary pending the adoption of regulations pursuant to Notice 74-11, Docket HM-120.

REED, Chairman, McADAMS, THAYER, and BURGESS, Members, concurred in the above recommendations. HALEY, Member, did not participate.

By: John H. Reed
Chairman

cc: Secretary Brinegar

APPENDIX F

Title 49—Transportation

CHAPTER II—FEDERAL RAILROAD ADMINISTRATION, DEPARTMENT OF TRANSPORTATION

[FRA E.O. No. 5]

LOADED TANK CARS OF FLAMMABLE COMPRESSED GAS

Emergency Order Restricting Handling

On August 14, 1974, a notice of proposed rule making (NPRM) Docket No. HM–120; Notice No. 74–11 was published in the FEDERAL REGISTER requesting comments on a proposal to restrict the handling of all cars placarded dangerous (39 FR 29197). The proposed restrictions would prohibit the uncoupling or cutting off of these cars while they are in motion, the striking of these cars by other cars moving under their own motion, and the coupling of these cars with more force than is necessary to complete the coupling. At the request of commenters the date for comment was extended from September 20, 1974, to October 22, 1974.

On September 21, 1974, an accident occurred involving the handling of DOT 112A tank cars transporting Butadiene, a flammable compressed gas. This accident resulted in one fatality, 66 injuries and over ten million dollars in damages. On October 11, 1974, the National Transportation Safety Board (NTSB) issued Safety Recommendations R–74–29 and 30 recommending that FRA issue an emergency order to prohibit switching of all tank cars containing flammable compressed gas unless the tank cars are under control of a locomotive and prohibit such tank cars from being coupled by other free-rolling equipment. In addition, the NTSB recommended procedures to assure compliance with the order.

More than forty comments were received in response to the NPRM in HM–120. An analysis of the comments indicated that a large number of commenters wanted further study to be made with some interim precautionary measures be taken with the cars that have caused the problems. Several commenters suggested FRA take action on the tank cars that have been involved in most of the accidents—the 112A and 114A uninsulated tank cars transporting flammable compressed gas. In addition, commenters suggested that tests be conducted to determine safe coupling speeds and the efficiency of hump yard retarders. FRA believes that the commenters have raised some good points which should be studied further before permanent changes are made in the regulations. Another NPRM will be published soon requesting additional comments to assist in determining the best practical changes in the regulations necessary to improve safety. However, FRA believes that in the interim, special precautions must be taken in handling 112A and 114A tank cars.

FRA has determined that emergency action must be taken to prevent more catastrophic accidents from occurring. Therefore, pursuant to the authority of Section 203 of the Federal Railroad Safety Act (45 U.S.C. § 432) I am issuing the following Order:

ORDER

In addition to the requirements of Parts 170–189 of Title 49 of the Code of Federal Regulations governing the transportation of hazardous materials, effective 12:01 a.m., October 27, 1974, a railroad may transport flammable compressed gas in DOT 112A and DOT 114A uninsulated tank cars that are not equipped with head shields prescribed by the Hazardous Materials Regulations Board in Docket HM–109, Amendment No. 5, 173–83, 179–15 published in the July 31, 1974, issue of the FEDERAL REGISTER (39 FR 27572), 49 CFR 179.100–23, only under the following conditions:

(a) DOT specification tank cars 112A and 114A that are not equipped with head shields required by 49 CFR 179.100–23, transporting flammable compressed gas requiring dangerous placards, shall not be cut off in motion. No car moving under its own momentum shall be allowed to strike any DOT 112A or 114A tank car containing flammable compressed gas placarded dangerous, that is not equipped with head shields required by 49 CFR 179.100–23, nor shall any such car be coupled into with more force than is necessary to complete the coupling.

(b) The shipping papers required by 49 CFR 174.510 for loaded tank cars containing flammable compressed gas placarded dangerous must carry the notations: "DOT 112A" or "DOT 114A" and "must be handled in accordance with FRA E.O. No. 5."

(c) Railroad employees must be informed of the presence of these cars and instructed to handle them in accordance with the requirements of this order.

A civil penalty of not less than $250 nor more than $2500 will be assessed for each violation of this order.

An opportunity for review of this order is provided in accordance with section 554 of Title 5 of the United States Code.

(Sec. 203, 84 Stat. 972, 45 U.S.C. 432; and sec. 1.49(n) of the regulations of the Office of the Secretary of Transportation, 49 CFR 1.49(n))

Issued in Washington, D.C. on October 25, 1974.

JOHN W. INGRAM,
Administrator.

[FR Doc.74–25402 Filed 10–29–74;11:25 am]

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TRAINING CENTER
LEARNING RESOURCE CENTER
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